

The opinion in support of the decision being entered today was *not* written for publication and is *not* binding precedent of the Board.

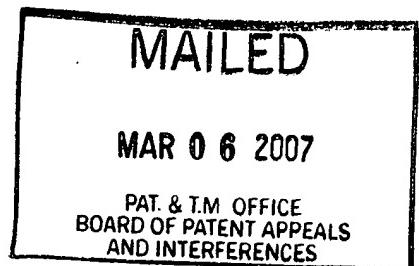
UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

*Ex parte* DOUGLAS A. CRISSAN  
and RAJARATHINAM G. SUBRAMANIAN

Appeal 2006-2622  
Application 09/392,124  
Technology Center 2600

Decided: March 6, 2007



Before KENNETH W. HAIRSTON, MAHSHID D. SAADAT, and JEAN R. HOMERE, *Administrative Patent Judges*.

SAADAT, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134(a) from the Examiner's final rejection of claims 1-32, which are all of the claims pending in this application.

We reverse.

## INTRODUCTION

Appellants' invention is directed to speech signal processing using improved multi-phase analysis (MPA) for generating the short-term characteristics of an input speech signal and a target vector. According to Appellants, the MPA process may be improved by generating a plurality of variable-amplitude pulses, each of the sequences having a different average amplitude value instead of the one gain parameter (Specification 2-3). An understanding of the invention can be derived from a reading of exemplary independent claim 1 which is reproduced as follows:

1. In a speech processing system including a signal processor arrangement that analyzes an input speech signal and, in response, generates the short-term characteristics of the input speech signal and a target vector, a method of analyzing the input speech signal comprising:

generating from the target vector and the short term characteristics, a plurality of sequences of variable-amplitude pulses, each of the sequences having a different average amplitude value; and

outputting a signal corresponding to a sequence of equal-amplitude pulses which, according to an error criterion, represents the target vector.

The Examiner relies on the following references in rejecting the claims:

### U.S. Patents

Bialik	US 5,568,588	Oct. 22, 1996
Adoul	US 5,754,976	May 19, 1998

### Other Publications

Bernard Sklar (Sklar), "Digital Communications - Fundamentals and Applications," Prentice Hall, 1998, pp. 60-65.

The rejections as presented by the Examiner are as follows:

1. Claims 1-27 and 29-32 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Bialik and Adoul.
2. Claim 28 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Bialik, Adoul and Sklar.

We make reference to the Briefs and the Answer for the respective positions of Appellants and the Examiner.

#### OPINION

The main point of contention is based on whether the pulse sequence of Bialik has or may be modified by Adoul to have varied amplitudes, as required by claim 1. Appellants assert that Bialik neither teaches “sequences of variable-amplitude pulses” (Br. 5), nor may be properly modified by Adoul, which relates to Code Excited Linear Prediction (CELP) techniques (Br. 6-9). The Examiner responds by arguing that pulse sequence determiner 25 of Bialik in Figure 3 shows different pulse amplitudes because they have gain indices of 7 and 8 (Answer 13). Appellants further argue that Bialik actually teaches different gains for two different pulse sequences, but the same gain is used for all the pulses within each sequence, generating a sequence of pulses with equal amplitude (Reply Br. 5).

As a general proposition, in rejecting claims under 35 U.S.C. § 103, the Examiner bears the initial burden of presenting a *prima facie* case of obviousness. *See In re Rijckaert*, 9 F.3d 1531, 1532, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993) and *In re Fine*, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). A *prima facie* case of obviousness is established when the teachings of the prior art itself would appear to have suggested the

claimed subject matter to one of ordinary skill in the art. *See In re Bell*, 991 F.2d 781, 783, 26 USPQ2d 1529, 1531 (Fed. Cir. 1993); *Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir. 1988); *Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.*, 776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985). In considering the question of the obviousness of the claimed invention in view of the prior art relied upon, the Examiner is expected to make the factual determination set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 17, 148 USPQ 459, 467 (1966), and to provide a reason why one having ordinary skill in the pertinent art would have been led to modify the prior art or to combine prior art references to arrive at the claimed invention. *See also In re Rouffet*, 149 F.3d 1350, 1355, 47 USPQ2d 1453, 1456 (Fed. Cir. 1998). Such evidence is required in order to establish a *prima facie* case. *In re Piasecki*, 745 F.2d 1468, 1471-72, 223 USPQ 785, 787-88 (Fed. Cir. 1984).

Contrary to the Examiner's position, the pulse sequence determiner 25 of Bialik outputs pulse sequences having uniform gains within each sequence. In fact, the portion relied on by the Examiner (col. 6, ll. 28-34) relates to two different sequences depicted in Figures 3A and 3B, each having a different gain index. Therefore, although the gain for one sequence is different from that of another sequence, the pulses within each sequence of Bialik have the same gain or uniform amplitude.

We also remain unconvinced by the Examiner's assertion (Answer 16) that Adoul may be relied on to prove how one of ordinary skill in the art would have modified Bialik to generate sequences of variable amplitude pulses. Not only has the Examiner not proposed a convincing line of reasoning for the combination, the Examiner uses Appellant's own

disclosure to justify modifying Bialik (Answer 16-17). An obviousness analysis commences with a review and consideration of all the pertinent evidence and arguments. In reviewing the Examiner's decision on appeal, the Board must necessarily weigh all of the evidence and argument. *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). In this case, as discussed by Appellants (Reply Br. 7-8), the Examiner has not shown how Adoul suggests the modifications nor why such modifications would have improved matching the target vector in Bialik.

Therefore, we agree with Appellants (Br. 4-6) that there is no teaching or suggestion for the Examiner's proposed combination of Adoul's variable amplitude pulses in a codebook search with the Multi-pulse analysis of Bialik. Accordingly, based on the weight of the evidence and the arguments presented by the Examiner and Appellants, we are constrained to reverse the Examiner's decision and not sustain the 35 U.S.C. § 103 rejection of independent claims 1, 3, 5, 7, 10, 12, 15, 17, 20, and 25 as well as dependent claims 2, 4, 6, 8, 9, 11, 13, 14, 16, 18, 19, 21-24, 26, 27, and 29-32, argued together as one group, over the combination of Bialik and Adoul.

Turning next to the 35 U.S.C. § 103 rejection of claim 28, we note that the Examiner further relies on Sklar for teaching an exponential function for the pulse train recited in this dependent claim. However, the Examiner has not pointed to any teachings in Sklar that would have overcome the deficiencies of the applied prior art as discussed above with respect to claims 1-27 and 29-32. Accordingly, we do not sustain the 35 U.S.C. § 103 rejection of claim 28 over Bialik and Adoul in combination with Sklar.

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## CONCLUSION

In view of the foregoing, the decision of the Examiner rejecting claims 1-32 under 35 U.S.C. § 103 is reversed.

REVERSED

PGC

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